Pend Oreille Fishery Recovery Program

2008 Accomplishments

Issue 1 **January 2009**

As most anglers are now well aware, the populations of Gerrard rainbow and bull trout that made Pend Oreille a world-famous fishery are dependent on an abundant prey-base of kokanee. Unfortunately, an increasing population of lake trout has lead to an overabundance of predators and low kokanee survival. In essence, the predator:prey ratio is out of balance.

The predator problem was first identified in 2000. Since then, fishery biologists and anglers have generally come to agree that restoring the rainbow and bull trout fishery will require a significant and immediate reduction in the number of predators, combined with long-term suppression of the lake trout population. Since 2006, an Angler Incentive Program (AIP) has encouraged anglers to target rainbow and lake trout by paying a reward. The effort was significantly enhanced with the implementation of commercial netting equipment. The AIP and netting efforts have been funded largely by Avista and BPA for mitigation of Cabinet Gorge and Albeni Falls dams. The contracted fishermen brought specialized equipment and decades of experience fishing for lake trout in Lake Michigan. The netters use short-set gillnets (to minimize injury to non-target fish) and deepwater trap nets to collect lake trout. To insure the public gets the maximum benefit from the netting program, all lake trout removed are processed for delivery to area food banks.

In many ways, 2008 was the most encouraging year we've seen to date. Anglers removed just over 13,000 lake trout and nearly 4,700 rainbow trout. The commercial netters removed an additional 11,761 lake trout. Between the AIP and the netters, nearly 25,000 lake trout were harvested from the lake in 2008, bringing the total since the effort began in 2006 up to 63,597! The kokanee population showed some very promising signs of recovery (see page 2). So how many are still left and how long will the program need to continue? Though we can't yet provide a definitive answer, the 2008 results provide some very important progress markers. Adult lake trout (spawning

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Number of rainbow and lake trout removed from Pend Oreille since 2006 by netting and angling.

	2006		2007		2008		Total	
	Lake trout	Rainbow trout	Lake trout	Rainbow trout	Lake trout	Rainbow trout	Lake trout	Rainbow trout
Angling	11,041	5,948	17,665	8,141	13,020	4,695	41,726	18,784
Netting	4,274	0	5,836	0	11,761	0	21,871	0
Total	15,315	5,948	23,501	8,141	24,483	4,695	63,597	18,784

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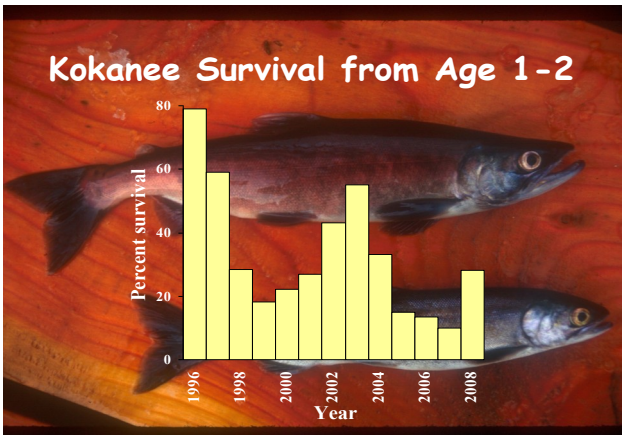
size fish in excess of 24 inches) continues to be harvested at an unsustainable level. Based on a random sample of acoustic tagged fish (see page 3) exploitation of spawners by the netting operation was around 65% in September and October alone! We expect this level of harvest on spawning lake trout to result in very low levels of reproduction and ultimately the collapse of the lake trout population, allowing the kokanee population to recover and once again provide the foundation for healthy rainbow and bull trout populations.

Unfortunately, the netting program has confirmed an abundance of two to five year-old lake trout in the population. These young fish (generally 6 to 14 inches) are just becoming vulnerable to gillnets. Most fish are not yet vulnerable to angling until four to five years of age, or 14-16 inches. It is difficult to know how many are still in the lake, but it is clear that the intensive gillnetting effort will need to continue for at least three more years in order to continue to effectively exploit these young fish as they enter the population. In essence, the lake trout suppression effort is not unlike turning off a hose. Even though anglers and the netters appear to be well on the way to shutting off the spigot (over-exploiting spawners and shutting off reproduction), there will still be water in the hose (juvenile lake trout entering the population). Efforts targeting the juvenile lake trout in the coming years amount to draining the hose.

Kokanee Population Showing Positive Signs

The IDFG Fish Research Crew monitors the status of the kokanee population in Lake Pend Oreille every year. The primary sampling methods are trawling (towing a large net behind a boat to capture kokanee) and hydroacoustics (scientific-grade sonar equipment used to count fish). In combination, these techniques provide us with information to estimate kokanee abundance, survival rates, age structure, biomass, and other population status indicators. In 2008, we saw that kokanee abundance remained near historic lows that are well below levels necessary to provide a sport fishery. However, positive signs that conditions are improving for kokanee were seen for the first time in several years. For instance, estimated abundance of mature (ages 3 and 4) kokanee increased to 25,000 fish from an all-time low of 10,000 fish in 2007. More encouraging was the increased survival rate from age-1 to age-2, which was 28% in 2008 compared to 10% in 2007 (see figure below). Survival of kokanee at this stage of their life-cycle provides an important indicator of predation levels. While a survival rate of 28% is below our goal (50-80%), it suggests that kokanee are suffering less predation. Similarly, biomass (total pounds of kokanee) increased for the first time since 2003. This tells us that the kokanee population was able to produce more than it lost to predation over the past year, instead of the recent trend where predation has driven kokanee abundance and biomass lower and lower each year. Egg collection from kokanee at Granite Creek provided 647,000 eggs for hatchery operations, a slight increase from 486,000 in 2007. While hatchery returns to Granite Creek were similar to 2007, greater increases were observed for wild shoreline spawners. The combined information gathered in 2008 showed improvements in kokanee status for the first time in several years. It is still too early to expect big improvements in the kokanee population as a result of predator removal efforts, but we are encouraged by what we saw in 2008. Over the next few years we hope to see continued improvements.

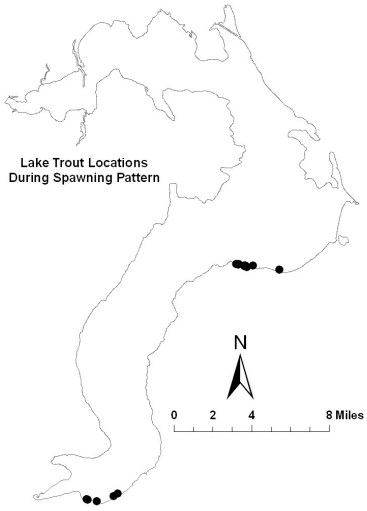
"We estimated a threefold increase in juvenile (age-2) kokanee survival from 2007 to 2008"

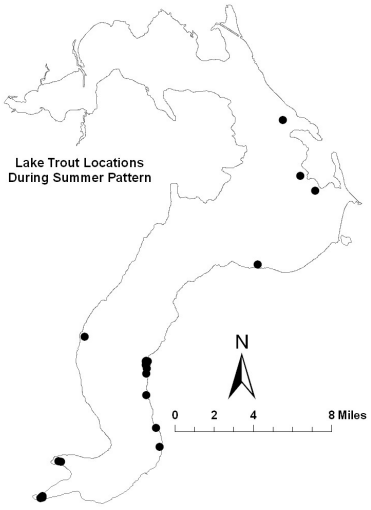


Acoustic Tags Help Netters Target Spawning Lake Trout

To help steer the efforts of the commercial netting crew, particularly during the spawning season, the IDFG Fishery Research Crew surgically implanted acoustic or "sonic" tags in 33 mature lake trout. Fish were captured during the spring from areas throughout the lake. This was done to ensure the sample was representative of the entire adult lake trout population. The tagged lake trout were tracked from July through December, which included tracking on at least a weekly basis when commercial netters were working.

The results were very interesting – and helpful. In both 2007 and 2008, we observed very defined movement patterns of lake trout to two spawning areas in the entire lake. Nearly all of the tagged fish migrated to either Windy Point or Echo Bay during September and October. At each spawning area, lake trout occupied areas along the shoreline in depths of 100-120 feet. The concentrated distribution of lake trout at these sites allowed commercial netters to more effectively capture and remove them with gill nets. In fact, netters recaptured 15 of the 23 lake trout that were carrying acoustic tags during the spawning season. Since these tagged fish represented the entire population of mature lake trout, we estimated that 65% of the mature lake trout in the lake were removed during the fall of 2008 from netting alone.

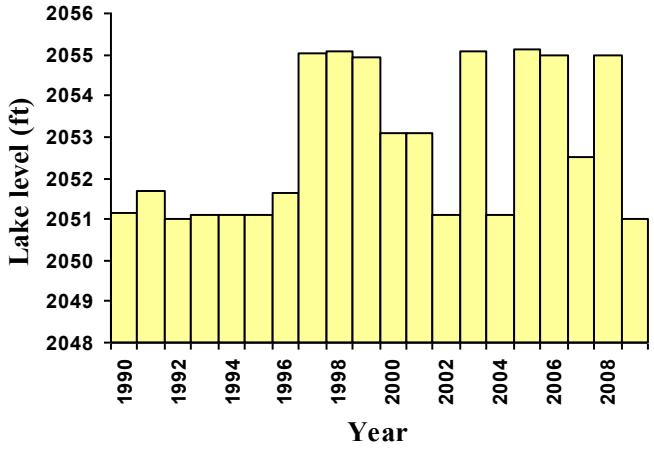




Adult lake trout showed very clear migrations to two spawning sites in 2008. Summer distribution (top) was widespread, but during October (left), virtually all tagged lake trout moved to one of two spawing locations.

Winter Lake Level Benefits Kokanee Spawning Habitat

Every year the water level in Lake Pend Oreille is dropped for the winter months. Depending on the year, the surface elevation of the lake is set at either 2,055 feet or 2,051 feet. Coordination meetings last fall resulted in a decision to set the lake level at 2,051 feet this winter. In most years, kokanee benefit from the higher lake level because more suitable lakeshore gravel is submerged and available for spawning. However, drawing the lake down every few years acts to redistribute spawning gravels and clean them of fine sediments. This process improves the quality of spawning habitat for kokanee. We expect the current winter lake level to benefit kokanee spawning conditions over the next few years.



A bull trout sits over a nest or "redd" during spawning.

Redd Surveys Help Track Bull Trout Populations

Bull trout across Idaho and the other western states have been listed as "threatened" by the U.S. Fish and Wildlife Service. As a threatened fish no harvest opportunities currently exist in Idaho. Bull trout were historically a major component of the world famous fishery in Pend Oreille. The current Idaho state record bull trout was a 32 pound trophy from Lake Pend Oreille taken in 1949. The objective of the IDFG is not only to maintain a bull trout population, but to restore a harvest fishery as well. This will only be possible when the population is fully capable of supporting additional harvest..

A key indicator will be a "stable or increasing population". This requires an ability to accurately monitor population trends. To do that, each fall, IDFG and partner agencies and organizations monitor bull trout abundance in standard index streams throughout the Panhandle. Unlike many fish monitoring programs abundance isn't monitored by counting fish. Instead, bull trout abundance is monitored indirectly by counting bull trout redds that were left behind by spawning fish. Redds are cleared depressions found in stream gravels where eggs were deposited and covered, much like a nest. Redds are counted by walking streams and visually identifying these cleaned depressions. In 2008, redd counts were completed in 20 streams in the Lake Pend Oreille drainage—virtually all of the bull trout spawning habitat.

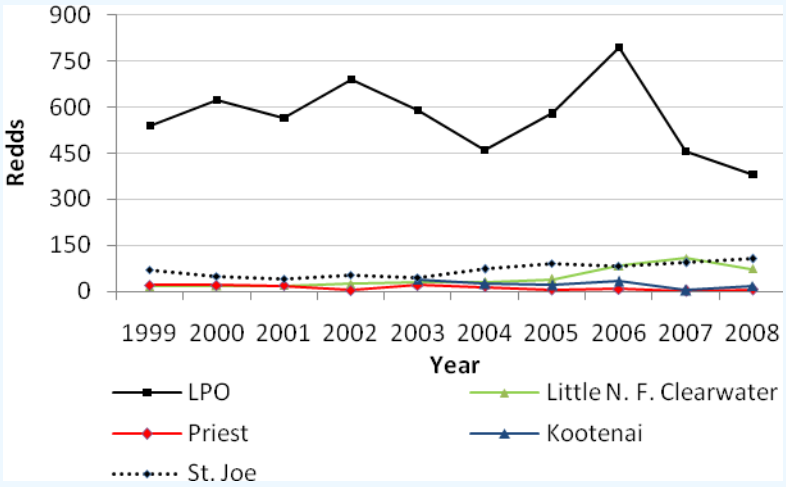


Figure 1. Long term (10 Yr) trends in bull trout redd counts in Pend Oreille (LPO) and other index streams in the Idaho Panhandle.

The Lake Pend Oreille redd counts have declined over the past two years. Though not ideal, and certainly not indicative of an increasing population, it's important to understand that redd counts vary from year to year. For that reason, any individual year may not accurately reflect the true bull trout population. Rather, the long term trends are typically more useful for monitoring population status.

The IDFG in cooperation with many other agencies, local groups, businesses, and individuals aren't just monitoring how many bull trout are out there, we're also working on restoration projects to help improve numbers of bull trout. Currently, in addition to the lake trout removal efforts, projects are underway that enhance habitat by improving stream conditions, by removing barriers that stop bull trout from getting to prime spawning areas.

Acknowledgements

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